PRACTICAL APPLICATION OF OBD DIAGNOSTICS FOR VEHICLES

OBD vehicle diagnostics Dacia Logan

Today's diagnostic systems for motor vehicles are designed in such a way that the diagnostic equipment can be carried in a dedicated bag containing a laptop computer, a set of connecting cables, and the necessary adapters for connecting to the vehicle.

The set comes with:

• Laptop

• Docking module

• USB cable

• Computer bag

Picture of the kit packed for transport. In the bag to the right of the computer there is an adapter for connecting the computer to the city network for charging.

5.2. Procedure for using diagnostic equipment

Turning on the computer.

Briefly press the power button.

After that, wait for the operating system to fully load and all programs that are set to start when the computer starts.

When the computer is ready to work, the image on the screen looks like this. On the lower right side, you can see the image of the battery with the mark of the percentage of charge. A fully charged battery (the mark is then 99%) can keep the computer running for about 3 hours.

The following software packages are already installed on the computer:

• Scan Master Free

• Digimoto Lite

• OBD DIAG

• VAG COM

The icons of those programs (the icon - the image that activates the program) are located along the left edge of the screen. Below them is the icon for the computer version of the VAG COM manual - VAG COM Handbuch. This manual is in German and the interaction with the programs on your computer as well as with the Windows XP operating system is in English. The VAG COM program is primarily intended for vehicles from

production program VAG a.g. That is Volkswagen, Audi, Škoda and Seat. For them and on the connection module, it is provided that when connecting to the EOBD connection, the KKP mode of operation is selected.

The other three programs are intended for diagnostics on a wide range of vehicles and can be used according to which one is the easiest or the most aesthetically pleasing for you to work with. In some cases when for some reason you cannot get a sufficient level of fault description in one program, try another one, especially when it comes to error codes that are not related to engine operation (engine codes look like this - Pxxx. P is the designation for Powertrain or power train).

Connecting diagnostics to the vehicle:

The EOBD connection must be located within 1m of the driver in the cabin. Hidden (so as not to disturb the interior design of the vehicle) most often under the dashboard, under the ashtray or in the glove compartment. The picture shows the diagnostic port in the glove compartment. We see that in the following picture:

In the event that it is necessary for the module to work in KL or KKL mode (exclusively for vehicles from VAG a.g. production), before turning on the module, press the button on the module, turn on the module with the button pressed and after two seconds release the button - the light on the module lights up constantly. Other work protocols, and there are 11 of them in total, the module can recognize and adjust automatically according to the vehicle to which it is connected.

Connecting to a computer:

Connect the USB cable to the corresponding socket on the computer, as shown in the picture.

In doing so, the computer will automatically recognize that it is a serial adapter and will assign the following characteristics to it:

• COM Port 4

• 9600, 8, N, 1

Starting the program:

Place your finger on the red pointer button in the middle of the keyboard. By gently pushing it in the desired direction, place the pointer on the screen on the desired icon.

When the cursor is on the desired icon, press the left red button for selection, twice briefly (and quickly) or once briefly, in order to select the desired program and then the ENTER key to confirm the selection. The left click is used to select or start the object on which the cursor is on the screen. The right click is used to call up an additional menu related to the displayed object. For basic work with the computer, only left-click or double-click is most often used.

This is the START screen on which you can see whether communication with the EOBD module and the connector has been established and the parameters of the connector type, and if the manufacturer provided for this possibility, the vehicle identification number - VIN. In addition, you can see the status of the error indication on the control panel - the symbol of the MIL lamp.

Program OBD II Scan Master freeware edition – DTC:

The DTC screen is used to read the status of the fault memory. In doing so, two types of errors can be distinguished - permanent and momentary.

Permanent errors are in the upper sub-screen and current errors are in the lower one. On the left side of the sub-screen marked with DTC are the error codes as given by the vehicle's computer, and on the right side is their description.

It is possible that a description will not appear for some error, since the standard provides only the first 1000 codes for engine errors (in the form of Pxxx) and the rest is left to

freely assignable to pimps. Still offered

the programs have between 3000 and 7000 error codes in their database so that they meet most needs.

It is possible that one program gives a description of the error and the other only the error code, so it is worth starting other programs when you need to get an accurate description of an error.

There are two virtual buttons READ and CLEAR on the two windows.

By clicking on the READ field, errors are read from the vehicle's memory. By clicking on the CLEAR field, all errors recorded in the memory of the vehicle's computer are DELETED. If you are not authorized to do so, never delete the memory so that the authorized service technician has a clear idea of the condition of the vehicle when it comes for service and diagnostics.

Program OBD II Scan Master freeware edition – Sensor data:

The Sensor Data screen shows the statuses of the most important engine sensors.

By clicking on the READ field, the reading of the sensor is started, and by clicking on the STOP field, the reading is stopped. Program OBD II Scan Master freeware edition – Freeze frames On the freeze frames screen (frozen image) you can see the statuses of the most important sensors memorized at the moment when the vehicle's computer detected and remembered the error.

Digimoto Lite Program – Starting Communication:

Select CONNECTION from the main menu by clicking and OPEN from the drop-down menu to start communication.

You have the option to select all offered sensors for reading by clicking on the Check/Uncheck ALL field or individual sensors by clicking on their corresponding field.

Activating a smaller number of sensors also means reading them faster, since the program reads the data for all selected sensors individually one after the other in a circle. If there are fewer of them, one circle is read faster and the reading starts from the beginning. This is especially important when you monitor phenomena that change quickly and you don't need most other sensors.

Program Digimoto Lite – Error Codes

Tab Error Codes allows us to see the errors stored in the vehicle's computer and possibly delete them.

Clicking on the REFRESH field refreshes the content of the screen, and clicking on the CLEAR CODES field deletes the memorized errors. In the Lite version of the program, it is not possible to read the Freeze Frame data stored at the time of the error.

Program Digimoto Lite – Serial Interface

The Serial Interface tab gives us insight into the communication between your computer and the vehicle's ECU. You can see the query code and the response code from the vehicle. For diagnostic purposes, this function is not important. The following picture shows the screen with the data that is transferred between the vehicle and the diagnostic equipment.

Program OBD DIAG - Opening communication

After starting the OBD DIAG program, you need to click on the button marked with a small lightning bolt in the lower right corner of the window. In the picture it is illuminated.

Program OBD DIAG – TROUBLECODES

The Troublecodes screen gives us the state of the stored fault codes and their descriptions from the vehicle's computer memory.

Errors are read after clicking on the READ CODE field and deleted by clicking on CLEAR CODE. In this version of the program, the Freeze frames screen is not active.

Program OBD DIAG – Current Values

The Current values screen shows the status of the most important sensors. This screen is divided into a series of sub-screens, and the selection is made by clicking on the PREV field. MENU or NEXT MENU for the previous or next screen.

By clicking on the virtual buttons, to the left of the sensor name, their reading can be turned on (red) or off (white).

Program OBD DIAG – Charts Screen

Charts gives us a graphical representation of the number of revolutions (and in the full version of another optional sensor) in time.

AgvInerternals tool

The AgvInternals tool allows us to trick programs that are intended to work exclusively with plug-in modules based on ELM ICs. The module in front of you is based on the AGV4000 integrated circuit with extended capabilities compared to the ELM32xx series of integrated circuits, but it is compatible with them in terms of commands.

That is why all programs written for communication with ELM integrals also work with AGV modules. However, in order to separate the work with the ELM series and some other series, the programmers have set a limit in some programs, so the program checks with which integrated circuit the connection is established before starting the communication. If the answer is not ELM32... (it doesn't matter anymore) it refuses to work with such a module. By activating the AgvInternals program, we have the opportunity to read how the module is presented and, if desired, change its name.